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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,800	08/17/2006	Youji Inoue	U 016441-4	2403
140	7590	02/22/2010	EXAMINER	
LADAS & PARRY LLP 26 WEST 61ST STREET NEW YORK, NY 10023			SUCH, MATTHEW W	
			ART UNIT	PAPER NUMBER
			2891	
			NOTIFICATION DATE	DELIVERY MODE
			02/22/2010	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

nyuspatactions@ladas.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/589,800	<b>Applicant(s)</b> INOUE ET AL.	
	<b>Examiner</b> MATTHEW W. SUCH	<b>Art Unit</b> 2891	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 11, 12, 17 and 18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11, 12 and 18 is/are allowed.
- 6) ☒ Claim(s) 17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (Proc. 2003 MRS Fall Meeting, K10.52 as provided in the Information Disclosure Statement dated 17 August 2006) in view of Katz ('397).

Suzuki et al. disclose synthesis and properties of perfluorinated pentacene ( $C_{22}F_{14}$ ), as the n-type semiconductor material in organic field effect transistors, OFETs (see section K10.52 of MRS Fall 2003 Symposium Program: "Symposium K: Functional Organic Materials and Devices"). However, Suzuki fails to teach the conventional required structural elements and order of these elements in order to form an organic field effect transistor.

However, Katz teaches an organic field effect transistors with a substrate (Element 10) and thin films of a gate electrode (Element 12), a gate insulating film (Element 14), organic semiconductor layer (Element 16), and source and drain electrodes (Elements 18 and 20) stacked on the substrate in this order. It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the organic field effect transistor of Suzuki with the conventional configuration taught by Katz. One would have been motivated to do so since Katz

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teaches that this configuration is advantageous because it provides intimate contact to the organic semiconductor and reliable device performance (Col. 2, Lines 59-63).

The language, term, or phrase "wherein the thin film of organic semiconductor layer is obtained by controlling temperature of the substrate to 30°C or higher and 65°C or lower and vacuum-depositing tetradecafluoropentacene (C<sub>22</sub>F<sub>14</sub>) on the substrate 1×10<sup>-4</sup> pascals or lower", is directed towards the process of making a tetradecafluoropentacene (C<sub>22</sub>F<sub>14</sub>) organic semiconductor layer. It is well settled that "product by process" limitations in claims drawn to structure are directed to the product, per se, no matter how actually made. In re *Hirao*, 190 USPQ 15 at 17 (footnote 3). See also, In re *Brown*, 173 USPQ 685; In re *Luck*, 177 USPQ 523; In re *Fessmann*, 180 USPQ 324; In re *Avery*, 186 USPQ 161; In re *Wethheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re *Marosi et al.*, 218 USPQ 289; and particularly In re *Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or otherwise. The above case law further makes clear that applicant has the burden of showing that the method language necessarily produces a structural difference. As such, the language "wherein the thin film of organic semiconductor layer is obtained by controlling temperature of the substrate to 30°C or higher and 65°C or lower and vacuum-depositing tetradecafluoropentacene (C<sub>22</sub>F<sub>14</sub>) on the substrate 1×10<sup>-4</sup> pascals or lower" only requires a tetradecafluoropentacene (C<sub>22</sub>F<sub>14</sub>) organic semiconductor layer, which does not distinguish the invention from Suzuki in view of Katz, who teaches the structure as claimed.

***Allowable Subject Matter***

3. Claims 11-12 and 18 are allowed.

4. The following is an examiner's statement of reasons for allowance:

Regarding claim 11, a search of the prior art does not disclose or reasonably suggest a method of fabricating an organic thin-film transistor comprising a substrate and an organic semiconductor layer, wherein the organic semiconductor layer is obtained by controlling temperature of the substrate to 30°C or higher and 65°C or lower and vacuum-depositing tetradecafluoropentacene (C<sub>22</sub>F<sub>14</sub>) on the substrate at  $1 \times 10^{-4}$  pascals or lower.

Regarding claim 12, a search of the prior art does not disclose or reasonably suggest a method of fabricating an organic thin-film transistor comprising a substrate and an organic semiconductor layer, wherein the organic semiconductor layer is obtained by controlling temperature of the substrate to 24°C or higher and 65°C or lower and vacuum-depositing dodecafluoronaphthacene (C<sub>18</sub>F<sub>12</sub>) on the substrate at  $1 \times 10^{-4}$  pascals or lower.

Regarding claim 18, a search of the prior art does not disclose or reasonably suggest a n organic thin-film transistor comprising a substrate and thin films of gate electrode, gate insulating film, organic semiconductor layer, and source and drain electrodes stacked on the substrate in order, wherein the thin film of organic semiconductor layer is dodecafluoronaphthacene (C<sub>18</sub>F<sub>12</sub>).

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Response to Arguments***

5. The examiner notes that the Office action dated 28 October 2009 had typographical errors in the citation of references for the rejection of claim 17 under 35 U.S.C. 103(a). As such, a new corrected Office action is being furnished herein with a new statutory period of reply.

6. Regarding the Applicant's arguments filed 28 January 2010: The Applicant traverses the rejection of claim 17 as set forth in the Office action. The Applicant's traversal is on the grounds that the "product-by-process" claim language of "wherein the thin film of organic semiconductor layer is obtained by controlling temperature of the substrate to 30°C or higher and 65°C or lower and vacuum-depositing tetradecafluoropentacene (C<sub>22</sub>F<sub>14</sub>) on the substrate at 1x10<sup>-4</sup> pascals or lower" yields a product that is structurally distinguished from the prior art. The Applicant cites Figure 2 and Page 14, Line 22 through Page 15, Line 4 as evidence of this structural difference.

7. In response, the examiner notes that this evidence is not persuasive for at least the following reasons. While not objectionable, the Office reminds Applicant that "product by process" limitations in claims drawn to structure are directed to the product, per se, no matter how actually made. *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also, *In re Brown*, 173

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USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wethheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al.*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or otherwise.

As stated in the Office action, the applicant has the burden of proof in such cases to show that the structure resulting from the process necessarily produces a distinguished structure from the prior art. The applicant's showing fails to distinguish an organic semiconductor layer "wherein the thin film of organic semiconductor layer is obtained by controlling temperature of the substrate to 30°C or higher and 65°C or lower and vacuum-depositing tetradecafluoropentacene (C<sub>22</sub>F<sub>14</sub>) on the substrate at 1x10<sup>-4</sup> pascals or lower" necessarily produces a structural difference which distinguishes the claimed invention from the device of the prior art of Suzuki in view of Katz. Instead the cited portions of the specification show a structural difference by x-ray diffraction peaks of a (i) perfluoropentacene film vacuum deposited at 70°C under 1x10<sup>-4</sup> pascals or lower versus a (ii) perfluoropentacene film vacuum deposited at 50°C or 25°C under 1x10<sup>-4</sup> pascals or lower. This does not constitute evidence that the claimed structure resulting from the "product-by-process" necessarily produces a structural distinction over the device of Suzuki in view of Katz. Instead the evidence provided merely compares perfluoropentacene films formed at different temperatures.

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***Contact Information***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW W. SUCH whose telephone number is (571)272-8895. The examiner can normally be reached on Monday - Friday 9AM-5PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kiesha Bryant can be reached on (571) 272-1844. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew W. Such/  
Examiner, Art Unit 2891